

After the death of the monster a partial autopsy was made, care being taken not to injure it more than absolutely necessary. The abdominal cavity was opened, and the contents appeared nearly normal. The anus was imperforate, and the rectum enormously distended with meconium. There was a single stomach, into which two œsophagi entered in the median line through practically a common opening. The liver was large, and apparently from its irregular shape represented the fusion of two organs, there being, however, but a single gall-bladder. The kidneys were normal, the testicles undescended. On examining the thorax two hearts were found in a single pericardial sac, while the lungs showed two apparently normal external lobes, while the internal lobes were more or less fused.

The mother of the child was of German extraction, belonging to one of the numerous religious sects which make up the farming population of Lancaster county. She was eighteen years of age, unmarried, and had been delivered late in March, 1903, of her first child. She was the oldest of a large family, and nothing abnormal could be ascertained in her family history. The father was a light mulatto, and the child showed unmistakable evidence of negro blood. The mother's convalescence was uneventful.

TWO CASES OF VIOLENT BUT TRANSITORY MYOKYMIA AND MYOTONIA APPARENTLY DUE TO EXCESSIVE HOT WEATHER.

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LOCALIZED acute muscle cramps, especially in the calves, are not uncommon and are sometimes very severe; but, excluding tetanus and other conditions due to poisons or to distinct lesions of the nervous system, widespread cramps are rare, and, as acute conditions, they are seen chiefly in connection with profuse diarrhœa (cholera and cholera nostras) or tetany; and even in these conditions the spasm does not usually involve the trunk muscles. Furthermore, true tetany is seldom and cholera almost never met with in this country.

In the cases that I am about to describe there was exceedingly violent tonic spasm, involving all the extremities as well as the abdominal muscles; the characteristics of tetany were not present; there was no noteworthy digestive disturbance; and the tonic spasms occurred as interruptions of a most remarkable grade of myokymia. The whole disturbance subsided with extreme rapidity,

and in both cases was apparently due to exposure to excessive heat. The myokymia was an even more peculiar and striking feature of the cases than the tonic spasm. Very high grades of fibrillary contraction are, at best, rare, when unassociated with demonstrable organic disease; and I cannot determine that myokymia of such brief duration as that in my cases, but, at the same time, of a comparable degree of severity, has heretofore been described.

In their chief symptoms my cases resembled, on the one hand, the frequently quoted cases of Talma, which he thought presented conditions so far resembling those in Thomsen's disease as to deserve the name of myotonia acquisita; and, on the other hand, the cases of Kny and Schultze, in which there was a remarkable grade of myokymia without noteworthy tonic spasm. As Schultze remarks, the chief feature in his case was the severe fibrillary contractions; while in Talma's the chief feature was tonic intention spasm; in my cases, however, both these features were present and were very severe; and the most remarkable fact concerning them was their brief duration.

Besides the brevity of the attacks, their relation to heat is of interest. In the cases of Kny and Schultze, and in two of Talma's, the conditions present were referred to exposure to wet and cold; and others have made similar observations. The frequency of muscular cramps in swimmers, too, is a matter of tradition. I think that slight degrees of localized cramp to which the subjects pay but little attention, and which occur particularly in the calves, are not uncommon during excessively hot weather, even when digestive disturbance is absent; but I do not know that exposure to excessive heat is recognized as a cause of myospasm. The literature on sunstroke and heat exhaustion, at any rate, contains, so far as I can determine, no reference to such a complication or sequel.

In this relation it is interesting that one of my patients was so subject to cramps when bathing that he had been unable to learn to swim; and, on the other hand, that before the severe attack during which I saw him he had repeatedly had mild attacks of cramps in the extremities when overheated, and when no digestive disturbance was present. Evidently there was in this case, as shown by the history of the patient's childhood, a persistent tendency to myospasm; and, with this predisposition, extremes of either heat or cold tended to cause more or less severe myospasm, his attack while under my observation having been a great exaggeration of the more common conditions.

Although this man was admitted after the other, I shall describe his case first, for I did not see the other patient during his most acute symptoms.

CASE I.—J. H. P., aged thirty-one years, a locomotive fireman, was admitted to the Episcopal Hospital July 3, 1903. His family history was entirely without bearing upon his condition; of his

immediate family, he had lost one brother, of an unknown cause. He had had measles and scarlet fever during early childhood, and pneumonia at the age of nine years, and was said to have had walking typhoid fever later. He had malaria three years ago, having had this disease also when a child. He is subject to brief attacks of diarrhoea, which he thinks are largely due to drinking ice-water. During the last year, when overheated, he repeatedly had in his hands and feet cramps somewhat resembling those in the present attack, though very slight in degree. He has also never been able to swim on account of his tendency to these cramps. He states that upon emotional or other excitement he has always had a good deal of twitching in his hands, and that when at school, if told to write upon the blackboard, excitement sometimes increased this twitching to such an extent that he was unable to hold the crayon and would repeatedly drop it. He has also often noticed slight twitching in the calf muscles.

The present attack began on July 2, 1903, at about three o'clock in the afternoon, while the patient was at work on his engine. The weather was very hot; he became greatly overheated, and was suddenly seized with painful cramps, beginning in the fingers, and almost immediately afterward appearing in the calves of the legs, the thighs, the forearms, and the abdomen. These cramps gradually grew worse until the time of his admission to the hospital. For some hours before admission they had been very frequent and exceedingly painful, although the individual spasms were of brief duration. He had had no disturbance of digestion at the beginning of the attack or until about fifteen hours thereafter. He then became somewhat nauseated and vomited once. His bowels had been normal. He had eaten a small piece of salt mackerel on the morning of July 2d; but, except for this, he knew of no possible dietetic cause. He had taken no other sea-food, no fruit, and no milk or ice-cream.

Upon admission, physical examination showed the patient to be a muscular, well-nourished man. His face was flushed, as the result of his occupation and of the slight fever present. His tongue was clean, but rather dry. His abdomen was neither distended nor tympanitic, and there was no abdominal discomfort other than that caused by the frequent spasms in the muscles of the abdominal wall. The lungs were clear throughout, and the heart was negative. The arteries were not at all sclerosed, so far as could be determined. Examination of the liver, the spleen, and other abdominal organs was likewise entirely negative. There was slight enlargement of a few lymph glands in the groin and the axilla, and a few very small cervical glands could be felt.

The most striking feature of the case—and a very remarkable one—was the constant fascicular contraction in the muscles of the feet, legs, thighs, abdomen, hands, and forearms. There were

also occasional slight twitchings of the muscles of the nose and of the rest of the face, and of the upper arm. This movement was by far most pronounced in the muscles of the calf, where it gave rise to continuous pulsatile or wave-like motions beneath the skin, these taking place with the utmost rapidity. Contractions appeared synchronously in various portions of the calf muscles, and continued with such energy and rapidity that they suggested the movements of a mass of very lively snakes. Next to the calf-muscles, the muscles of the forearm and of the hand showed the most active movements. They were, however, much less striking in this region, for while some portion of the affected muscles exhibited fibrillary contractions almost constantly, the individual contractions were much more distinctly appreciable as such than they were in the calves, because only one or two portions of the muscles showed contraction at one time, while in the calves there was a maze of motion. The movements caused frequent twitching of the fingers, somewhat like a mild subsultus tendinum. They produced no movements in the feet or toes. The fibrillary twitchings elsewhere were decidedly less striking and less constant, and the individual contractions were so far separated as to time and space as to be individually quite distinct.

Besides this myokymia, the patient presented very slight persistent carpopedal spasm, most marked in the hands, which were always held in a position somewhat resembling slight tetany; the fingers were slightly flexed at the metacarpophalangeal joint, the thumb being adducted and in apposition. The position was not that of perfectly typical tetany, as the fingers were spread apart somewhat, the first finger in particular being decidedly abducted and occasionally strongly extended. There was a constant feeling of slight stiffness or contracture in the hands, and, except during the more violent spasms, the man was continually rubbing his hands gently in the attempt to relieve this stiffness. The anterior and posterior muscles of the calf, also, were constantly in mild spasm, the foot being held slightly rigid at right angles to the leg. The abdominal muscles, likewise, were practically all the time in very slight contracture.

The mechanical irritability of the muscles was greatly exaggerated. Very gentle palpation caused no spasm and was not painful. Moderately active palpation of the muscles; sudden, moderate pressure, or, even more markedly, a slight tap upon them would bring on violent and exceedingly painful local tonic spasm, during which the muscles would become board-like in hardness. At this time even gentle palpation of the muscles was painful. The spasm would last for fifteen or twenty seconds, and sometimes a little longer, and would then gradually relax, there being a distinct after-contraction, which took about half a minute to disappear.

Even a slight attempt at voluntary use of the muscles of the trunk or the extremities would often bring on violent spasm; and on attempting to sit up in bed the muscles of the abdomen became as hard and firm as a plaster cast, the spasm being exceedingly painful. Any active movement of the hands or the feet would bring on a spasm. I could not determine that there was any entirely spontaneous spasm. At times this seemed to occur, but usually, I think always, it could be referred to an attempt at voluntary movement. Mechanical irritation of the muscles, as by a blow, sometimes caused general spasm of the muscles of the extremities and abdomen; but this, I think, was due to the fact that the pain of the local spasm produced by the blow made the patient unconsciously throw his muscles almost immediately into action elsewhere, thus secondarily bringing on the spasm of these other parts. There was no spasm of the back or neck and no trismus. There was no abnormal mechanical irritability of the nerves; Trousseau's and Chvostek's phenomena were absent, as was Hoffmann's phenomenon.

There was no tenderness over the nerves. Changes in skin sensation were absent, and, except during the painful spasm, there were no subjective disturbances of sensation beyond some numbness of the hands. The knee-jerks and arm-jerks were slightly excited. The plantar reflex was not excited, and the epigastric and cremasteric reflexes were normal. Babinsky's phenomenon was absent.

I had no galvanic battery at hand, but excitability to the faradic current was greatly increased. The weakest current obtainable threw the muscles into violent spasm, just as did mechanical irritation. Tetanus was produced whether both electrodes were applied over the muscles, avoiding the nerves, or one electrode was put over the muscle and the other on the sternum.

The patient's mental condition was entirely normal, except that he displayed the slight soporosity to be expected with his fever. When I saw him his temperature was 101° ; upon admission it had been 99.3° . Two or three hours after I saw him his temperature fell, and by the next morning it was normal, rising again that afternoon to 99.4° . Soon afterward it fell to normal and remained so subsequently.

Large doses of bromide were given, and also magnesium sulphate every hour until he was purged. The painful spasms disappeared entirely the evening of admission, and the fibrillary twitching became very much reduced. On the following day the patient was entirely free from painful spasm, and the muscles had quite lost their abnormal irritability to voluntary movement or direct mechanical stimulation. There was still fibrillary twitching in the calves and forearms, but of only slight degree. The urine, examined meanwhile, showed normal conditions, except for a

slight trace of albumin. The blood examination soon after admission showed: hæmoglobin, 93 per cent.; red cells, 5,640,000; leukocytes, 12,200.

The man remained entirely comfortable after this, and on the 6th demanded his discharge. At this time it was noted that his general condition was entirely normal. The tendon reflexes were normal. There was very slight fibrillary twitching in the calves and forearms, but the patient stated that this was usually present. The reactions to the faradic current were the same as were those in a normal man tested at the same time, and there was no abnormal irritability of the muscles.

CASE II.—L. S., colored, of unknown age (about fifty-five years), was admitted on July 1, 1903. I did not see this patient during his active symptoms, but Dr. Despard, at that time my resident, made careful observations and afterward, when the other patient was admitted, stated that the conditions were almost exactly alike in the two cases.

This man gave a negative family history and could not remember any previous disease. He had never had muscular cramps or twitchings. He said that this illness had begun after he had been hard at work and had become much overheated. He was seized with violent cramps in the muscles, first of the hands and then of the arms and legs. The cramps rapidly extended to all the muscles of the body, with the exception of those of the head and face. The attack came on at about eleven o'clock in the morning and he was admitted to the hospital late that afternoon. Meanwhile he had felt nauseated and had finally vomited once, and this had entirely relieved his nausea.

When he came in he exhibited a condition that need not be detailed, as it was practically the counterpart of that in the case already described. Painful spasms that were of brief duration but that occurred frequently affected most violently the muscles of the forearms and hands, and of the calves and feet; but also involved the thighs, the upper arms, and the trunk. Between the spasms there was constant and violent fibrillary twitching of the muscles of the extremities and of the trunk, that in the calf muscles being particularly pronounced and of much the same grade as in the other case. The mechanical irritability of the muscles showed the same excitation as in the other case. The electric excitability, unfortunately, was not tested at this time. Subsequently (when the patient was entirely over his spasms, however), the response to faradism was tested and found to be normal. As in the other case, the spasms were exceedingly painful. The patient showed no other abnormalities, except that there was a very high grade of arteriosclerosis, all the palpable arteries being hard, rough, and tortuous, and the urine showed the conditions to be expected with this—*i. e.*, a trace of albumin and a few hyaline and pale granular casts.

This man was purged, and nothing else was done for him. After having had a free bowel movement he was much improved, and by the following day was practically well—except that he still had a slight tendency to spasms and a very little fibrillary twitching in his muscles. Both the spasm and the twitching disappeared within about twenty-four hours after this. He was not tested during the attack for Chvostek's, Trousseau's, or Hoffmann's phenomena. The day after his admission, when I saw him first, and when he still had slight cramp, the phenomena mentioned were all absent. At that time the condition was so slight that I did not test the response of his nerves and muscles to electricity, doing this only later, when the admission of the other patient and his violent symptoms had made this man's condition of greater interest. The response to faradism was then, as stated, normal.

The cause of the phenomena in these cases is, of course, largely a matter of speculation. The short duration of the symptoms and the rapidity with which they disappeared after practically no treatment but mild purgation suggest a toxic origin. This statement, one that is perhaps somewhat too freely used nowadays when we are in the presence of the unknown, means in this case nothing more definite than that probably the high atmospheric temperature itself, or some little-marked digestive derangement produced by the heat, disturbed the body chemistry in some obscure way; although, on the other hand, I do mean by this suggestion that it seems improbable to me that the heat produced the condition directly, through mere irritation. The general body temperature of the first patient was but slightly elevated, except during a brief period; while the second showed practically no fever: and there are no observations indicating that elevation of the body temperature without toxæmia, even when the fever is very decided, tends of itself to excite spasm. The more or less pronounced spasm not infrequently seen in acute infections is almost certainly due less to the fever than to the toxæmia. There is, then, no good reason to believe that the slight elevation of body temperature exhibited by these patients had any direct relation to the spasm.

It is of course possible that the immediate effect of the external heat upon the skin may have excited the spasm reflexly, but this seems to me an unsatisfactory explanation; for greater heat than this when applied in the form of hot baths tends to relax such spasm rather than to increase it; and in these patients hot baths had never produced any tendency to spasm. I have, however, already referred to the fact that in the cases of Kny and Schultze, and in two of Talma's exposure to cold or to cold and wet excited the spasm, and I have also noted the effects of cold water in my first case. These observations, and particularly the common con-

ditions in swimmers' cramp, suggest that reflex irritation alone might possibly have excited the spasm.

This question is one that cannot be definitely settled. It is somewhat analogous to the nature of tetany, in connection with which there has been so active a discussion as to the relation of reflex action and toxæmia in the production of the spasm. In tetany the most satisfactory evidence certainly points toward toxæmia; and I think that the same is true of most of the acute and subacute cases of other forms of myospasm.

It is conceivable that the heat itself had nothing directly to do with the myospasm, that both my patients had some digestive disturbance that was but little evidenced by symptoms, and that toxic material absorbed from the digestive tract set up the spasm; but in the absence of anything more than nausea and slight vomiting, especially as these symptoms came on only after severe spasms had lasted several hours, such a source of the toxæmia, while possible, seems to me improbable and at best purely supposititious.

It at first occurred to me that, as they probably are in cholera, for example, the spasms in these cases might have been due to loss of fluid. If, however, this cause was active in my cases, it must have been the result of excessive sweating, as diarrhœa and severe vomiting had not occurred. Since I could not determine that either patient had been sweating excessively, this cause seems very improbable; and the blood count in the first case, although slightly high, is distinctly against such a view.

There is one other factor of sufficient interest to deserve mention, and this is the high degree of arteriosclerosis present in the second case. Walton has laid special stress upon the relation of arteriosclerosis to myospasms, and it is not improbable that in this case it was an important predisposing factor. In the first case there was apparently habitual predisposition; there was certainly no evident arteriosclerosis.

As to the classification of these cases: Any attempt to carry this out definitely is, I think, a somewhat fruitless task, except that it may be stated that they belong to a heterogeneous group, and will not fit well in any place in a schematic classification. The patients showed severe tonic intention spasm and presented at least several features of the myotonic reaction. Following Talma, therefore, and dwelling especially upon the tonic spasm, they might be classed as transitory acquired myotonia. On the other hand, Kny classes his cases as most closely related to paramyoclonus multiplex of Friedreich; and Dana agrees that myokymia is best placed in this class. Talma's name for his cases, however, is hardly justified by any intimate relation to Thomsen's disease, and Dana's view is strongly opposed to that of Gowers and Walton, and it seems to me that the latter authors justly exclude myokymia from the class that includes paramyoclonus multiplex. That my

cases have any serious connection with either Thomsen's disease or paramyoclonus multiplex seems to me to be almost out of the question.

If one is to make a definite classification merely on the basis of certain striking clinical symptoms, these cases might equally well or better be brought into a group with tetany. In a number of points they clearly resembled tetany; but, on the other hand, the tonic spasms were almost entirely intention spasms; the myokymia was quite as marked a feature as the tonic spasm; considering their severity, the attacks were remarkably brief for tetany; and much more important than these facts, the Chvostek, Trousseau, and Hoffmann phenomena were absent. Hence, these cases certainly cannot well be classed with tetany.

The variety of classifications adopted by various authors when dealing with the myospasms shows that the manner in which many of these conditions are grouped is largely a question of personal fancy. This can, it seems to me, scarcely fail to continue to be the case until the nature and the manner of causation of the various myospasms become clearer than they are at present.

LITERATURE.

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A CASE OF PAPILLOMA OF THE BLADDER, COMPLICATED WITH PYONEPHROSIS, WITH REMARKS ON THE SURGICAL TREATMENT OF PAPILLOMA.¹

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G. W., aged fifty-seven years, had noticed that for several months his urine had been mixed with blood; but other than a certain amount of weakness following these hemorrhages and a dull pain in the left lumbar region, the patient feels fairly well. Upon questioning, however, he complains of certain vague dyspeptic symptoms and dryness of the mouth. No headache. Sleep is uninterrupted, and examination of the thoracic viscera reveals

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